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10/527,199	03/10/2005	Hiroaki Sudo	L9289.05110	2887

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EXAMINER	
HERRERA, DIEGO D	
ART UNIT	PAPER NUMBER
2617	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/527,199	SUDO, HIROAKI	
	Examiner	Art Unit	
	DIEGO HERRERA	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *4/7/2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) *1-19,24 and 30* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *20-23, 25-29, 31-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Claims 24 and 30, have been cancelled, hence, claim rejection 35 USC § 112 is withdrawn.

Claims 20, 22-23, 34-36, 39 and 40 have been amended.

Response to Arguments

Applicant's arguments filed 4/7/2009 have been fully considered but they are not persuasive. In regards to applicant's arguments that motivation is not provided to modify Kotzin's apparatus to that of Ooba, besides the obvious, "An antenna array is a group of antennas or antenna elements arranged to provide the desired directional characteristics, hence, multiple inputs and multiple outputs" that of Kotzin's transmissions and that of Ooba receiving from multiple output device transmission with spreading codes, simply illustrates that the apparatus of Kotzin can sends and receives spreading codes and has the structure and components to spread and despread codes in sections and independently through an antennae when modify with the invention of Ooba and one of the benefits is cited in office action below as motivation to combine the reference of Kotzin and Ooba.

The reference of Kotzin and Ooba do disclose and suggest the applicant's claimed subject matter of independently setting spreading factors, see Kotzin col. 10 lines: 49-67, col. 11 lines1-18, wherein setting of amplitude and phases of this single Walsh code used to spread the TCH information on the individual antenna elements, hence, setting spreading factors.

In regards to applicant's arguments that, "FER, FEC, and BER do not separate data received from multiple antennas and therefore per force do not perform such data separation using a difference in characteristics of propagation channels," these are characteristics that are used by the reference of Kanemoto et al. to select spreading codes as can be follow on fig. 7 and further explained in ¶: 7-9, 74-76, wherein a parameter of quality has to be met in order to avoid problems based on the state of a propagation path.

In regards to applicant's arguments that Ooba is not cited in claim 35 please refer to final rejection office action page 12 line: 19, where Ooba is cited.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 20-31, 34, and 37-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kotzin et al. (US 6173005 B1), and in view of Ooba (US 6717929 B1).

Regarding claim 20. A code division multiple access transmitting apparatus (abstract, title, fig. 2, col. 2 lines: 48-58, col. 4 lines: 35-52, Kotzin et al. teaches base station having capability to communicate in CDMA) comprising:

a plurality of transmitting antennas (abstract, col. 2 lines: 48-58, col. 3 lines: 23-37, Kotzin et al. teaches plurality of transmitting antennas);

a parallel data forming section that forms a plurality of parallel data different from each other, from data addressed to a same transmitting party;

a first spreading section that spreads first parallel data to be transmitted from a first transmitting antenna (abstract, col. 2 lines: 48-58, col. 3 lines: 23-37, Kotzin et al. teaches plurality of transmitting antennas a first transmitting antenna with information to a specific user or mobile terminal);

a second spreading section that spreads second parallel data to be transmitted from a second transmitting antenna (abstract, col. 2 lines: 48-58, col. 3 lines: 23-37, Kotzin et al. teaches plurality of transmitting antennas second transmitting antenna with information to a specific user or mobile terminal with first information);

However, the examiner maintains that the spreading section was well known in the art at the time the invention was made and taught by Ooba (abstract, col. 1 lines: 5-10, col. 2 lines: 51—col. 3 lines: 4, Ooba teaches spreading codes provided for the plurality of antennas). Therefore, it would have been obvious to a person of ordinary skill in the art

at the time the invention was made to specifically include spreading sections for plurality of antennas as taught by Ooba for the purposes of or motivation to reduce the influences of an identical channel interference wave.

However, Kotzin et al. does not discloses a spreading method setting section that sets spreading factors, the number of spreading codes or the number of spreading codes assigned to one transmitting party in the first and second spreading sections independently (col. 10 lines: 49-67, col. 11 lines1-18, Kotzin teaches wherein setting of amplitude and phases of this single Walsh code used to spread the TCH information on the individual antenna elements, hence, setting spreading factors, since the claim language used is in the alternative the examiner chooses spreading factors as addressed by Kotzin); and

first and second transmitting sections that transmit the spread first and second parallel data from the first and second transmitting antennas using a multiple-input multiple-output scheme, nevertheless, the examiner maintains that these well known in the art at the time the invention was made and taught by Ooba (abstract, col. 2 lines: 51—col. 3 lines: 4, 48—col. 4 lines: 12, 40--col. 5 lines: 18, Ooba teaches multiple-input multiple-output schemes orthogonal message sending through the process of spreading sections). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to specifically include orthogonally sending through multiple-input multiple-output antennas spreading codes of information processed in spreading sections independently, as taught by Ooba for the purposes of or motivation of reducing interference.

Regarding claim 39. A radio transmitting method (abstract, title, fig. 2, col. 2 lines: 48-58, col. 4 lines: 35-52, Kotzin et al. teaches base station having capability to communicate in CDMA) comprising:

However, Kotzin et al. does not discloses first and second spreading steps of spreading parallel signals different from each other; nevertheless, the examiner maintains that it was well known in the art and taught by Ooba (abstract, col. 1 lines: 5-10, col. 2 lines: 51—col. 3 lines: 4, Ooba teaches spreading codes provided for the plurality of antennas); therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to specifically include spreading steps different from each other, as taught by Ooba for the purposes of improving communication efficiency.

first and second transmitting steps (abstract, col. 2 lines: 48-58, col. 3 lines: 23-37, Kotzin et al. teaches plurality of transmitting antennas), corresponding to the first and second spreading steps, respectively, of transmitting the spread parallel signals using a multiple-input multiple-output scheme; however Kotzin et al. does not discloses using a multiple-input multiple-output scheme of spreading codes of first and second spreading codes; nonetheless, the examiner maintains that this was well known in the art and taught by Ooba (abstract, col. 2 lines: 51—col. 3 lines: 4, 48—col. 4 lines: 12, 40--col. 5 lines: 18, Ooba teaches multiple-input multiple-output schemes orthogonal message sending through the process of spreading sections); therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to specifically include MIMO scheme of spreading codes for spread parallel signals, as taught by Ooba for the purposes of having a improved communication system, method,

and apparatus; and

a spreading method setting step of setting spreading factors (col. 10 lines: 49-67, col. 11 lines1-18, Kotzin teaches wherein setting of amplitude and phases of this single Walsh code used to spread the TCH information on the individual antenna elements, hence, setting spreading factors, since the claim language used is in the alternative the examiner chooses spreading factors as addressed by Kotzin), the number of spreading codes or the number of spreading codes assigned to one transmitting party in the first and second spreading steps independently (abstract, col. 2 lines: 51—col. 3 lines: 4, 48—col. 4 lines: 12, 40--col. 5 lines: 18, Ooba teaches multiple-input multiple-output schemes orthogonal message sending through the process of spreading sections, see rejection of claim 20).

Regarding claim 40. Kotzin et al. discloses a radio transmitting system comprising:

a parallel data forming section that forms a plurality of parallel data different from each other (fig. 2, col. 4 lines: 53-61, Kotzin et al. teaches orthogonal codes being transmitted), from data addressed to a same transmitting party (col. 3 lines: 38-51, Kotzin et al. teaches sending data to transmitting party)

However, Kotzin et al. does not discloses first and second spreading steps of spreading parallel signals different from each other; nevertheless, the examiner maintains that it was well known in the art and taught by Ooba (abstract, col. 1 lines: 5-10, col. 2 lines: 51—col. 3 lines: 4, Ooba teaches spreading codes provided for the plurality of antennas); therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to specifically include spreading steps different from

each other, as taught by Ooba for the purposes of improving communication efficiency.

the second parallel data having different content from the first parallel data and being addressed to a same transmitting party (col. 3 lines: 24-51, col. 4 lines: 10-15, Kotzin et al. teaches orthogonal being different than the first data);

a spreading method setting section that sets spreading methods in the first and second spreading sections independently (abstract, col. 2 lines: 51—col. 3 lines: 4, 48—col. 4 lines: 12, 40--col. 5 lines: 18, Ooba teaches multiple-input multiple-output schemes orthogonal message sending through the process of spreading sections, see rejection of claim 20); and

However, Kotzin et al. does not discloses a spreading method setting section that sets spreading factors (col. 10 lines: 49-67, col. 11 lines1-18, Kotzin teaches wherein setting of amplitude and phases of this single Walsh code used to spread the TCH information on the individual antenna elements, hence, setting spreading factors, since the claim language used is in the alternative the examiner chooses spreading factors as addressed by Kotzin), the number of spreading codes or the number of spreading codes assigned to one transmitting party in the first and second spreading sections independently; and

first and second transmitting sections that transmit the spread first and second parallel data from the first and second transmitting antennas using a multiple-input multiple-output scheme, nevertheless, the examiner maintains that these well known in the art at the time the invention was made and taught by Ooba (abstract, col. 2 lines: 51—col. 3 lines: 4, 48—col. 4 lines: 12, 40--col. 5 lines: 18, Ooba teaches multiple-input multiple-

output schemes orthogonal message sending through the process of spreading sections). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to specifically include orthogonally sending through multiple-input multiple-output antennas spreading codes of information processed in spreading sections independently, as taught by Ooba for the purposes of or motivation of reducing interference.

Consider claim 21. The code division multiple access transmitting apparatus according to claim 20, wherein signals transmitted from the first and second transmitting antennas are separated at the transmitting party by using a difference in characteristics of channels where the signals pass (abstract, col. 2 lines: 51—col. 3 lines: 4, 48-62, Ooba teaches transmitting from at least two antennas different spreading codes based on a characteristic of physical positions of antennas).

Consider claim 22. The code division multiple access transmitting apparatus according to claim 20, wherein the spreading method setting section sets spreading methods in the first and second spreading sections independently based on at least one of a channel quality, a degree of importance, and the number of retransmissions, of each signal transmitted from the first and second transmitting antennas (col. 7 lines: 9-27, Ooba teaches inverse spreading methods based on at least one of channel quality or diversity by adjustments through controller).

Consider claim 23. The code division multiple access transmitting apparatus according to claim 20, wherein the spreading method setting section performs the setting based on at least one of a channel quality, a degree of importance, and the

number of retransmissions, of each signal transmitted by radio from the first and second transmitting sections (col. 7 lines: 9-27, Ooba teaches inverse spreading methods based on at least one of channel quality or diversity by adjustments through controller).

Consider claim 25. The code division multiple access transmitting apparatus according to claim 20, wherein the spreading method setting section sets a spreading factor used in the first spreading section greater than a spreading factor used in the second spreading section (col. 7 lines: 9-27, Ooba teaches inverse spreading methods based on at least one of channel quality or diversity by adjustments through controller, hence, one skilled in the art can see that spreading factor can be greater in second spreading section).

Consider claim 26. The code division multiple access transmitting apparatus according to claim 20, wherein the spreading method setting section sets the number of spreading codes used in the first spreading section smaller than the number of spreading codes used in the second spreading section (col. 7 lines: 9-27, Ooba teaches inverse spreading methods based on at least one of channel quality or diversity by adjustments through controller, hence, one skilled in the art can see that spreading factor can be smaller in second spreading section).

Consider claim 27. The code division multiple access transmitting apparatus according to claim 20, wherein the spreading method setting section sets the number of spreading codes the first spreading section assigns to one transmitting party greater than the number of spreading codes the second spreading section assigns to one transmitting party (col. 7 lines: 9-27, Ooba teaches inverse spreading methods based on at least

one of channel quality or diversity by adjustments through controller, hence, one skilled in the art can see that spreading factor can be greater in second spreading section).

Consider claim 28. The code division multiple access transmitting apparatus according to claim 24, wherein the first parallel data comprises control information or retransmission information (col. 4 lines: 66—col. 5 lines: 22, Ooba teaches control information or in retransmission as stated by Ooba as inverse spreading codes being retransmitted).

Consider claim 29. The code division multiple access transmitting apparatus according to claim 24, wherein the spreading method setting section performs the setting for only a fixed period of time (col. 5 lines: 23-43, Ooba teaches spreading method setting section with predetermined set frequency, hence, set period of time).

Consider claim 31. The code division multiple access transmitting apparatus according to claim 24, wherein transmission power of the first transmitting section is set greater than transmission power of the second transmitting section (col. 2 lines: 59—col. 3 lines: 10, Kotzin et al. teaches power control method).

Consider claim 34. The code division multiple access transmitting apparatus according to claim 20, wherein the signals transmitted by radio from the first and second transmitting sections are converted in multicarrier form (col. 8 lines: 1-21, Ooba teaches spreading codes and inverse spreading codes for CDMA, hence, CDMA multicarrier form).

Consider claim 37. A communication terminal apparatus comprising the code division multiple access transmitting apparatus according to claim 20 (abstract, col. 2 lines: 51—

col. 3 lines: 4, 48—col. 4 lines: 12, 40--col. 5 lines: 18, Ooba teaches multiple-input multiple-output schemes orthogonal message sending through the process of spreading sections).

Consider claim 38. A base station apparatus comprising the code division multiple access transmitting apparatus according to claim 20 (abstract, title, fig. 2, col. 2 lines: 48-58, col. 4 lines: 35-52, Kotzin et al. teaches base station having capability to communicate in CDMA).

Claims 35-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kotzin et al., **Ooba**, and in view of Kanemoto et al. (US 20020160721 A1).

Regarding claim 35. A code division multiple access receiving apparatus that uses a multiple-input multiple-output scheme, the apparatus comprising:

However, Kotzin et al. does not discloses first and second receiving sections that receive signals in which varying data is multiplexed through first and second receiving antennas; nonetheless, the examiner maintains that this was well known in the art and taught by **Ooba** (col. 6 lines: 37-46, Ooba teaches different receiver antennas receiving information data or signals which is processed); therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to specifically include first and second receiving antennas, as taught by Ooba for the purposes of improving communication performance by higher spectral efficiency and link reliability or diversity.

However, Kotzin et al. does not discloses a separating section that separates the varying data prior to multiplexing, from the signals received respectively through the first

and second receiving antennas by using a difference in characteristics of channels where the signals pass, nonetheless, the examiner maintains that this was well known in the art and taught by Kanemoto et al. (abstract, fig. 2, ¶: 29-33, Kanemoto et al. teaches separator and observing characteristics received by receiver such as FER, FEC, BER); therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to specifically include separating section depending on received signal and characteristics of received signal, as taught by Kanemoto et al. for the purposes of sustaining good quality communication.

However, Kotzin et al. does not discloses specifically first and second despreading sections that respectively despread the separated signals, wherein:

spreading factors (col. 10 lines: 49-67, col. 11 lines1-18, Kotzin teaches wherein setting of amplitude and phases of this single Walsh code used to spread the TCH information on the individual antenna elements, hence, setting spreading factors, since the claim language used is in the alternative the examiner chooses spreading factors as addressed by Kotzin), the number of spreading codes or the number of spreading codes assigned to one transmitting party in the first and second despreading sections are set independently; nevertheless, the examiner maintains that this was well known in the art at the time the invention was made and taught by **Ooba** (col. 7 lines: 10-63, Ooba teaches inverse spreading codes or inversely spreading sections or as applicants calls it, despreading sections). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to specifically include despreading

sections of separated signals, as taught by **Ooba** for the purposes of or motivation of obtaining multiplex signals.

Consider claim 36. The code division multiple access receiving apparatus according to claim 35, wherein the despreading methods in the first and second despreading sections are set individually based on at least one of a channel quality, a degree of importance, and the number of retransmissions, of each signal received through the first and second transmitting antennas (col. 7 lines: 9-27, Ooba teaches inverse spreading methods based on at least one of channel quality or diversity by adjustments through controller).

Claims 32-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kotzin et al., **Ooba**, and in view of Onggosanusi et al. (US 20030016640 A1).

Consider claim 32. The code division multiple access transmitting apparatus according to claim 27, wherein the spreading method setting section applies the setting to a transmitting party having a lower channel quality than a predetermined quality (¶: 28, Onggosanusi et al. teaches various encoding techniques to improve signal communication).

Consider claim 33. The code division multiple access transmitting apparatus according to claim 24, wherein the first parallel data comprises a systematic bit when a turbo code is used as an error correction code (¶: 28, Onggosanusi et al. teaches various encoding techniques to improve signal communication).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DIEGO HERRERA whose telephone number is (571)272-0907. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid can be reached on (571) 272-7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Diego Herrera/
Examiner, Art Unit 2617

/Lester Kincaid/

Supervisory Patent Examiner, Art Unit 2617